Unit 5

Repair of Leakages in Basic Fittings and Fixtures

Introduction

A water leak can cause a major disturbance in the plumbing system. Leaks from water pipes, plumbing fixtures and fittings are a sizeable source of water wastage in our homes. Sometimes, considerable water leakages from the system may cause problems related to pressure moulding and significant water losses. Thus, as soon as a leak is found, its repair becomes an absolute necessity.

When you find a leakage in the plumbing fixtures, it is necessary to repair it as soon as possible to avoid damage to structures or surroundings, and to possibly make it cost effective in the long run.

Some leaks can be visible, and some cannot be seen with the naked eye. The result could be an unusually high water consumption, which will also reflect in your water meter.

So, what causes a plumbing leak?

Old pipes, cold climate and other old plumbing fittings and fixtures like geyser and toilets may also cause leaks.

How do you detect the point of leakage? First, check those areas where leaking in fixtures is common, that is, joints. If the leak is inside the house, check the toilets, sinks, faucets, and showerheads. It is possible that the

leak is minor enough for you to notice it. Leaking toilets and kitchen faucets are the most common and most unnoticed leaks.

Even when you cannot see a leak in the pipes, you might be able to hear or observe it. Move slowly to each and every point of the distribution system, starting from the lowest level and working your way up. Listen to the pressurised sound of water or dripping. Look for a small pool of liquid or water stain under the floor or up on the ceiling. Water damage on wood panelling, cabinets, drawers, or wallpaper can all be signs of an 'invisible' leak too.

If the leak is from outside, we can check the spigots. Double check to make sure they are fully tightened. Listen for the sound of dripping or running water. Underground leakage can be found by a wet surface or swelled surface due to excessive moisture.

If you think you have found the leak and can get to it, you could try to fix the problem. Most toilet and faucet leaks can easily be fixed by replacing the O-ring or tightening the fixtures. If you can reach a fractured pipe, you could apply the plumber's tape as a temporary solution until you have the chance to change the pipe.

The various sources of visible and invisible leaks along with remedies have been discussed in this chapter.

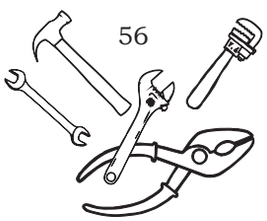
If you find any of these, you will have to take immediate action to replace or repair before any further damage occurs.

Sources of Leakage

Water supply line leaks

Sometimes, there are leaks in the water supply line coming to home from the meter. These are often difficult to detect because the supply pipe is usually buried at least 3 feet below the ground. Sometimes, the leaking water will travel along the pipe.

Another common exact point for the leaking water might be where the supply line rises above the ground and enters the house or building. If the soil is constantly damp at these locations, it might indicate a leak.



In case of sewer leaks, the water will seep up towards the ground surface, usually directly above the path of the underground pipe.

Leaks due to pipe corrosion

Pipe corrosion is a process that results in a reduction of thickness of the wall of a metal pipe, caused by electrolysis (chemical breakdown by electric current), junk, or acidity of water. Galvanic corrosion (resulting from a direct current of electricity) is created in a plumbing installation system in which two different kinds of metal pipes are joined, such as galvanised and copper pipe.

The principal indication of corrosion might be a leak in the framework inside the walls or floors of the structure. Water may appear a few dimensions beneath the leak. Use a piece of wood as a resonator to recognise and amplify the sound of the leak. Spot one end of the wood against your ear and the opposite end against the pipe and follow the sound. There will be more sound while drawing nearer to the leak.

Remedies

Galvanised pipes

After locating the leak, cut and replace the corroded pipe.

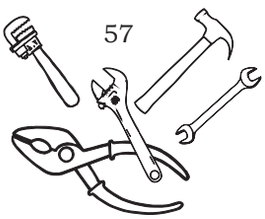
Step 1. Close the water at the nearest valve below the leak, and drain the pipe.

Step 2. When the fittings on both sides of the leak are not readily available, cut out the leaking section. One plumber should hold the pipe with a wrench to prevent its turning in the adjoining fitting, while another plumber cuts a thread on it.

Step 3. Replace the cut-out section with a desired coupling, a pipe section of the given length, and a similar union.

Copper pipes

Copper pipe resists corrosion, except when attacked by acids.



However, if a leak occurs in the copper pipe, then the steps listed below must be followed.

Step 1. Close the water at the nearest valve below the leak, and drain the pipe.

Step 2. Replace it with either soldered or compression joints.

We can also go with some more alternatives before and after, to prevent leakage. It can also be achieved by reducing corrosion. The following can be done to reduce corrosion.

Use of di-electric unions

These are fixed in the hot and cold water take-offs from the tank and it reduces the galvanic corrosion of water tanks. A di-electric union consists of a fibre washer, which shields or insulates the tank from the rest of the plumbing installations, preventing the flow of current from the tank to the system.

Use of magnesium rods

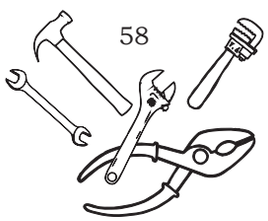
These are also used in a few geysers, such as the gas-operated type, to save against rust and corrosion. They act as electrolytic cells in which the magnesium dust goes into the solution, flows through the water, and is stored on the metal to be protected. The electrolytic action (electrolysis) diffuses the rods. The maximum life of the rods is 1½ years; then they must be changed.

Leaks in valves

All valves should be checked regularly for leaks. Most leaks are from washers or bonnets.

Leaks in faucets

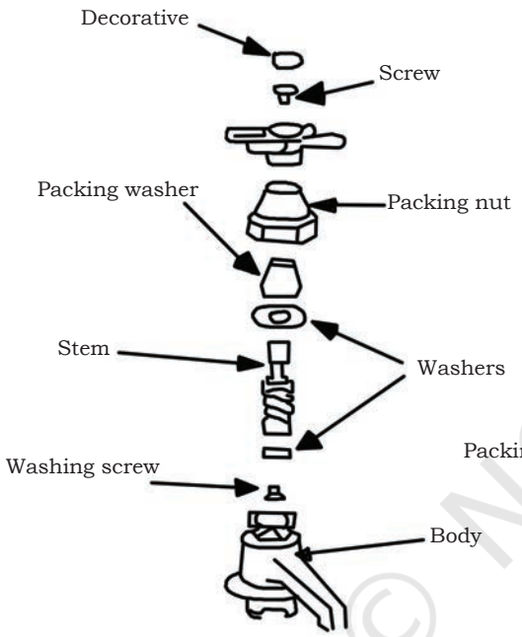
A faucet is a device that allows you to turn the flow of water on and off. Since faucets help dispense water, thus, keeping them in working condition is very important. The typical causes for a leaky faucet include corrosion, mineral deposit on the internal parts or defective gaskets, O-rings or washers. Before repairing any faucet, drain it by turning the water off at the fixture of the shut-off valve.



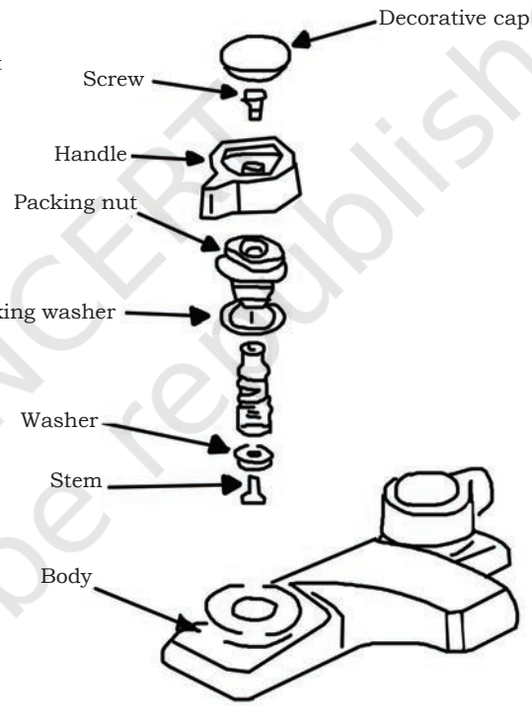
Compression faucets

These faucets have separate hot and cold water handles and their action requires you to tighten the handle down to turn the water flow off. Such faucets use a compression stem, which is a type of screw with a washer at the end of it pressing against a valve seat.

While repairing compression (or washer) faucets, first check the valve seat. If it is chipped or rough, reface it with a refacing tool or replace it.



(a) Single compression faucet



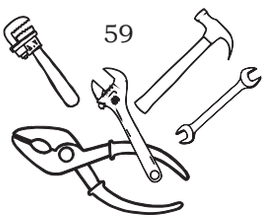
(b) Combination compression faucet

Fig. 5.1 (a, b) Compression faucets

Use the following procedures to repair single compression faucets. During disassembly, check all parts for wear and replace as needed.

Leak at the stem and the packing nut and washer

Step 1. Turn the water supply off at the shut off valve, and remove the cap, screw and handle.



Step 2. Remove the packing nut with a wrench, the old packing material and the washer.

Step 3. Place a new washer onto the stem's lower end, and reassemble all parts in order.

Step 4. Turn the water supply on and check for leaks and proper operation.

Leak at the spout

Step 1. Turn the water supply off at the shut-off valve. Remove the cap, screw and handle.

Step 2. Remove the packing nut with a wrench; then remove the stem from the body.

Step 3. Remove the screw and washer from the bottom of the stem.

Step 4. Place a new washer onto the bottom of the stem.

Step 5. Check the valve seat inside the body. If it is chipped or rough, reface the seat with a refacing tool. If the seat is even, place the stem into the body. Replace if needed.

Step 6. Reassemble all the parts in the proper order.

Step 7. Turn the water supply on and check for leaks and proper operation.

Leak at the base of the body

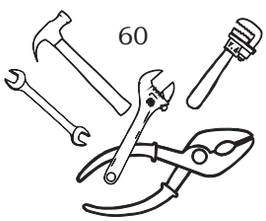
Step 1. Turn the water supply off at the shut-off valve. Remove the cap, screw and handle.

Step 2. Remove the packing nut with a wrench.

Step 3. Remove the worn washer from the packing nut.

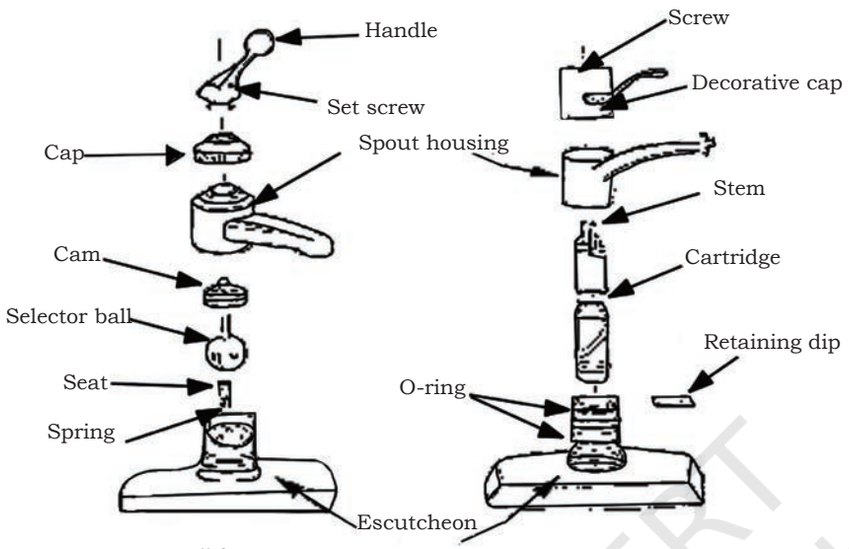
Step 4. Slide a new washer into the packing nut for a snug fit.

Step 5. Reassemble the parts in the proper order.

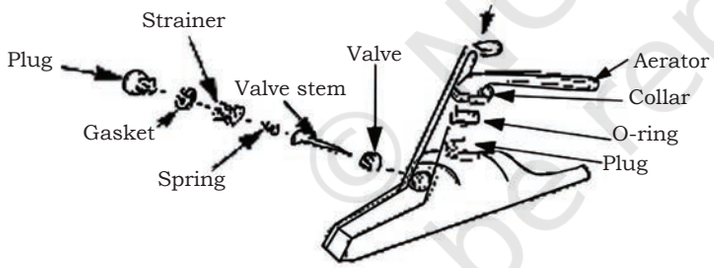


Step 6. Turn the water supply on and check for leaks and proper operation.

NOTE: Before repairing a faucet, drain it by turning the water off at the shut off valve. During disassembly, check all parts for wear and replace as needed.



(a) Ball faucet *(b) Cartridge faucet*



(c) Valve faucet

Fig. 5.2 (a, b, c) Components of faucets

Non-compression faucet repairs

Ball faucets

Commonly used in kitchen sinks, these washerless faucets can be identified by their single handle that regulates a special plastic or metal ball inside the faucet body. Because of the number of parts which make up this type of faucet, ball faucets tend to leak

more than other washerless faucets such as cartridge or disk faucet. Leaks in this type of a faucet can be caused by a corroded or gouged selector ball or by worn rubber valve seats.

Step 1. Remove the handle by loosening the set screw.

Step 2. Remove the cap and pull out the ball with the cam assembly.

Step 3. Use needle nose pliers to remove the two rubber valve seats and springs.

Step 4. Replace the rubber seats and/or the selector ball.

Step 5. Reassemble the faucet, ensuring that the slot in the ball aligns with the metal protection on the housing. Check for leaks.

Metal cartridge faucets

Such faucets look quite identical to a compression washer faucet. However, the action to turn off the water flow is more smooth and consistent in such faucets. The faucet turns off without additional pressure being required as in case of a compression faucet. Leaks in these faucets are usually caused by two O-rings in the faucet body. Replacing the O-rings should eliminate the leaks.

Step 1. Remove the screw and push a screwdriver down the hole to keep the stem in place while removing the handle and cover.

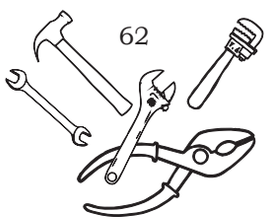
Step 2. Unscrew the retaining nut and remove the spout. The body of the faucet is exposed to get to the O-rings.

Step 3. Replace the O-rings.

Step 4. Reassemble the faucet and check for leaks.

Ceramic-disk cartridge faucet

Such faucets can be identified by their single lever over a wide cylindrical body. The disk faucet mixes hot and cold



water inside a mixing chamber. Such faucets generally use in up-down motion to regulate water flow and left-right motion to control temperature. In the ceramic disk, leaks are caused by a worn out or corroded disk.

Step 1. Press the tile handle all the way back to remove the set screw.

Step 2. Remove the handle and the two set screws under the spout.

Step 3. Disengage the stopper mechanism under the lavatory and remove the ceramic cartridge, which is held by two brass screws.

Step 4. Replace the cartridge.

Step 5. Reassemble the stopper mechanism and the faucet. Check for leaks.

NOTE: If the faucet malfunctions due to corrosion or wear, use the manufacturer's instructions to make repairs.

Valve faucets

Leaks in this type of faucet can be caused by a worn O-ring at the base of the spout or by other worn internal parts. See Fig. 5.2(c).

Step 1. Remove the spout and lift off the escutcheon. Remove the plugs on each side by turning them counter clockwise and pulling out the gasket, strainer, spring, valve stem, and valve seat.

Step 2. Remove the seat with a seat-removal tool or allen wrench.

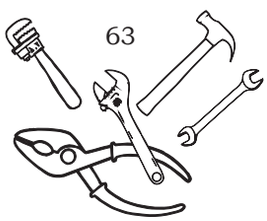
Step 3. Reassemble the faucet and check for leaks.

Shower heads

It is one of the main components of a shower that allows water to dribble through it. Shower heads deteriorate due to the following reasons.

Mineral build-up

This causes clogging, resulting in reduced water pressure.



Rust and leak

This reduces the life of the shower head, leading to reduction in pressure and unnecessary dripping. This creates the need to replace or repair the shower head.

Procedure for changing shower heads

1. Turn off the water—First, turn off the main pipeline, which is normally located at the basement towards the front of the home or near the water tank.

2. Clean the shower arm—Use a toothbrush to clean the shower arm's threads.

3. Install the shower arm—Wrap the head of the shower arm in teflon or pipe-thread tape and screw it into the pipe opening in the wall or ceiling.

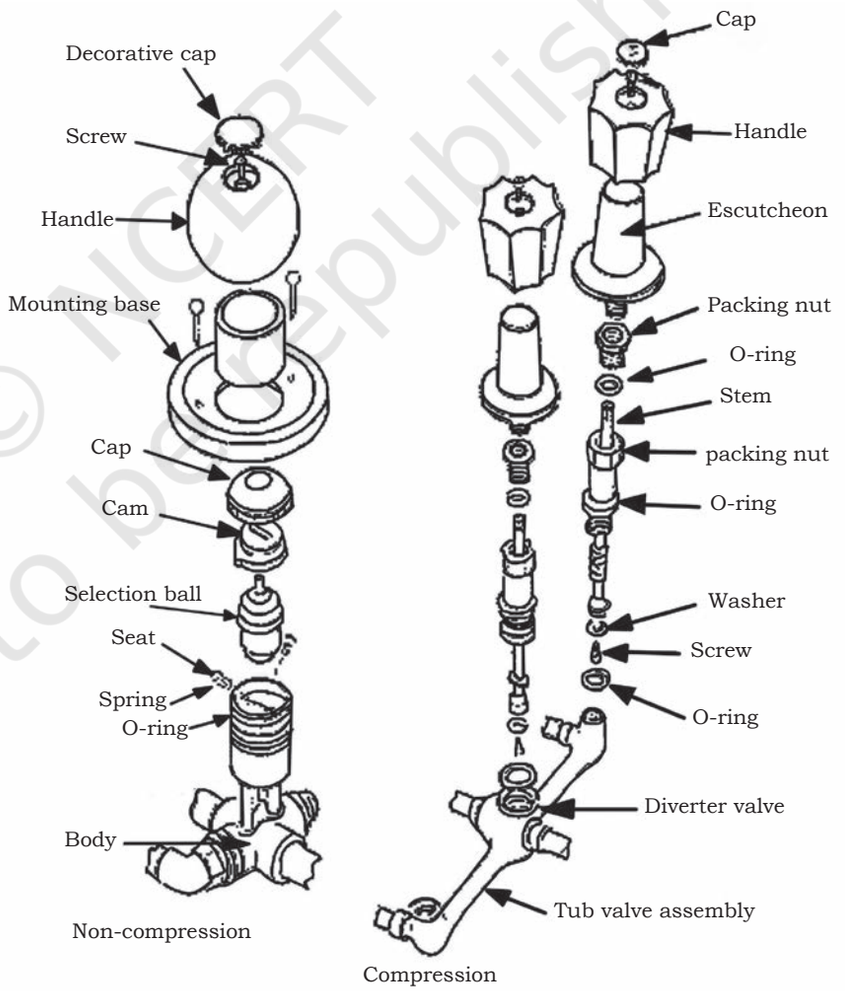


Fig. 5.3: Bathtub and shower faucet breakout

***4. Prep the shower arm*—**Slide the backing onto the shower arm and wrap the open end in tape.

***5. Install the shower head*—**Screw on the shower head by hand until it is snug. Wrap the shower arm and head in rags and use adjustable wrench to tighten the shower head further.

Shower faucets

These faucets function the same as compression and non-compression faucets on sinks and lavatories. Although bathtub and shower faucets are developed differently than sink and lavatory faucets, yet the repairing methods are similar.

Showers use various types of faucets. These include—

1. Single-handle/single valve faucet
2. Double-handle faucet
3. Three-handle faucet

Single-handle faucets

Single-handle faucets are commonly used. Valve cartridges in faucets are cylindrical devices that use O-rings to control the flow of water. Replacement is the easiest way to fix cartridge-related problems. The procedure to replace single-handle faucet is given here.

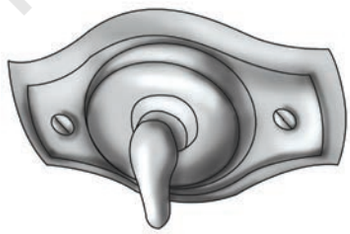
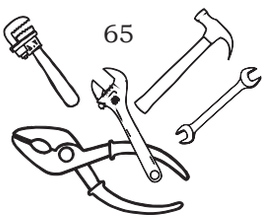


Fig. 5.4: Single-handle faucet

1. Turn off the water.
2. Locate the set screw under the handle or cap at the front of the unit. Remove the screw and pull.
3. Use a screwdriver to remove the retainer clip at the top of the cartridge housing. Be sure not to lose this piece.
4. Remove the cartridge by gently pulling with pliers.
5. Take the old cartridge to the hardware store to ensure you get the right replacement. Cartridges are specific to faucet make a model.
6. Insert the new cartridge.
7. Replace the retaining clip and reassemble your faucet. Turn the water back on to make sure your faucet does not leak.



Two-handle faucet

These faucets also have a mechanism that uses threaded handles and rubber seals to open and close water lines (Fig. 5.5). Installing a new stem is the easiest way to fix a malfunction, but we can also replace faulty hardware like seals and O-rings.

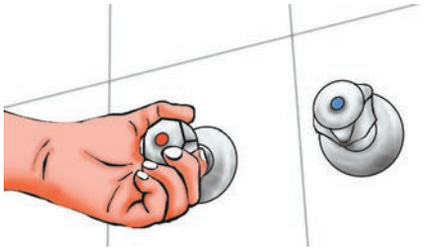


Fig. 5.5: Two-handle faucet

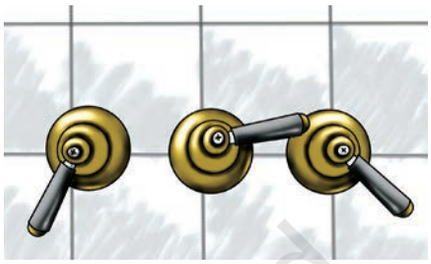


Fig. 5.6: Three-handle and diverter faucets

Three-handle and diverter faucets

These faucets have temperature stems (hot and cold handles) and diverter stems (Fig. 5.6). The procedure for repair has been discussed below.

Temperature stems

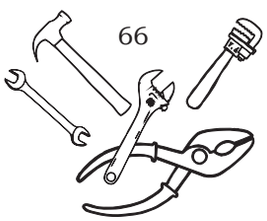
We can fix temperature stem issues the same way, we would a two-handle faucet.

1. Pry away the index cap at the front of the handle to access the handle screw. Remove the screw and pull. Use a handle puller if it is stuck. Use pliers or a deep-socket wrench to gently turn the stem counterclockwise.
2. Wrap teflon tape around the base of your stem and screw it into place.
3. Replace the handle hardware.

Wall diverter stems

This is usually the third handle in a three-handle valve. Replacing the faulty diverter valve is the easiest way to solve the problem. The steps to replace are given here.

1. Remove the cap and handle as in the single handle guide. Gently remove it, being careful not to mar the finish.
2. With a socket wrench, remove the old valve.



3. Wrap teflon tape around the threads of the new valve, leaving the first few threads bare to ensure a grip.
4. Insert the new diverter and give it an extra quarter turn after it is tight. Do not force it.
5. With the handle, turn it and test the water to make sure it only comes out of where it is supposed to. This is also a good time to shine a flashlight into the valve and make sure there are no leaks.
6. Reassemble the diverter handle.

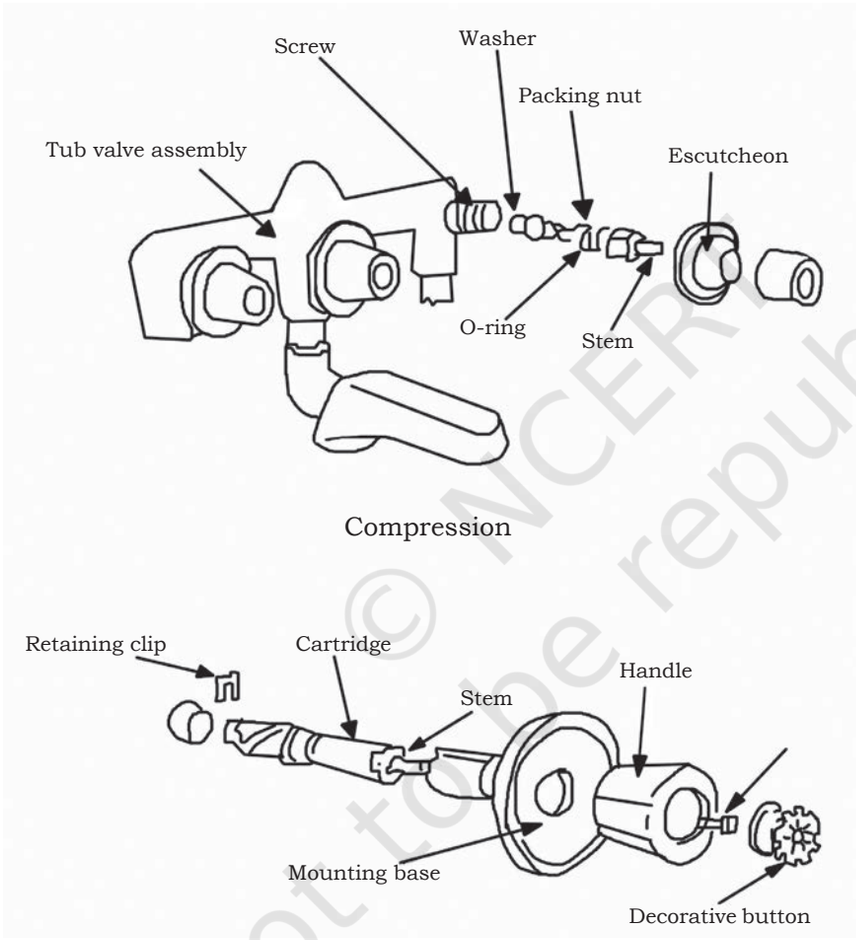
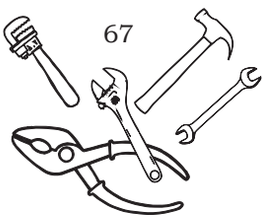


Fig. 5.7: Bathtub faucet breakout

It is important to ensure you routinely monitor any minor water leaks at home. This will prevent damages that will be costly to repair as well as lower our water bill. If you still cannot repair leakage due to severity of damage and it is required to stop leakage on urgent basis, we might look for some of the temporary repairs.



Remember to not risk a serious injury in trying to inspect or repair it.

Repair of bathtub faucet

The following steps are to be followed for the repair of a bathtub faucet.

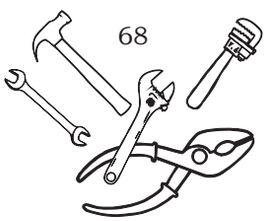
1. Disassemble the faucet—Removing the faucet handle is a difficult task. Due to corrosion, the handle gets jammed or weld the handle to the stem. Close the water supply to the faucet and open the valves to drain excess water present in faucet or tap. With the help of a thin blade of a pocketknife loosen the handle screw.

2. Remove the handle screw—Remove the handle screw. Then give a little jerk to the handle and pull it off. However, be gentle; if it is too hard, it may break, use a gentle push.

3. Loosen the handle—When the handle is not able to come out and we use force, it may break. Thus, use a special handle puller. Rotate the handle screw about halfway back into the stem. Fix the handle puller's post against the screw head and press the arms together behind the handle. Turn the post clockwise until the handle pops loose. Remove the handle screw and handle. Then pull off or unscrew the escutcheon plate.

4. Remove the stem—When the handle is removed, unscrew the escutcheon and stem assembly. The stem assembly is an important component which controls the amount and temperature of the water dispensed through the tub spout or shower head. The stem assembly is removed with a special bath socket wrench. Fix the bath socket with the stem bonnet and turn it counter clockwise so that it gets loosened. Unscrew and remove the stem.

5. Use a seat wrench—As you understand that leaks usually occur for two reasons, first the seat washer stiffens and would not seal properly. Sometimes, the water pressure gradually erodes the brass rim of the seat. Replace the seat using a special seat wrench.



***6. Replace the faucet stem parts*—**Change the broken washer and apply.

Temporary repairs for minor leaks

Minor leaks in a fixture require temporary or emergency repairs. Before making any repairs, turn off the water and relieve the pressure from the distribution system. Pipes can be temporarily repaired using the following steps.

Rubber hose or plastic tubing

Cut the pipe on either side of the leak with a hacksaw or pipe cutter. The section damaged pipe may be removed and replaced with a similar length of rubber hose or plastic tubing. To do this, slip the ends over the pipe and fasten them with hose clamps. The inside diameter of the hose must fit the outside diameter of the pipe.

Sheet rubber

Wrap the leaking area with sheet rubber. Place two sheet-metal clamps on the pipe (one on each side). Then, fasten the clamps with nuts and bolts.

Electrician's friction tape

Wrap several layers of friction tape around the hole or crack, extending the tape about 2 inches above and below the leak.

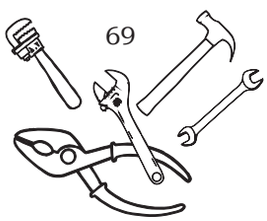
Wood plugs

Small holes can be filled with wood plugs. Drive a wooden plug into the hole after it is drilled or reamed. The plug will swell as it absorbs water, preventing it from being blown out by water pressure.

NOTE: It is always recommended that repair should be made as soon as possible to permanently replace the broken, weak or defective part. Replace it with a unit (and insulation if used) that is the same size and quality as the original installation.

Frozen pipes

Water supply lines may freeze when exposed to temperatures below zero degrees Celsius. Outside pipes must be buried below the frost line. In northern zones,



this may be 4 feet or more. If the temperature of a building deviates below freezing, inside pipes may also freeze, causing the pipe to break at the lowest point. Procedures for thawing above- and below-ground pipes are discussed in the paragraphs below.

Exposed pipes

A blowtorch is the best method to thaw the above-ground pipes, but there is a risk of fire. Use the following steps when using a blowtorch.

Step 1. Open the faucets in the line.

Step 2. Apply heat from the blowtorch at one end of the pipe and work along the entire length of the pipe.

Step 3. Continue to heat the pipe until the water starts to flow freely.

Pipes can be thawed by wrapping them with burlap or other cloth and pouring boiling water over the wrappings, thus transmitting heat to the frozen pipe.

When internal freezing is due to a failure in the heating plant, the heating plant must be repaired; a high temperature should be maintained in the building until the pipes thaw.

NOTE: Do not overheat as the solder joints will break loose when the solder melts.

Underground pipes

Use the following steps to thaw a frozen underground pipe.

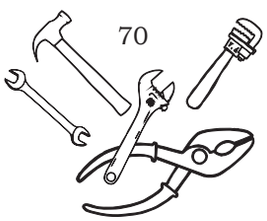
Step 1. Remove the pipe fittings.

Step 2. Place a small warm up pipe or tube into the frozen pipe.

Step 3. Add an elbow and a piece of vertical pipe to the outer end of the warm up pipe.

Step 4. Keep a bucket below the opening to the frozen pipe.

Step 5. Insert a funnel into the open end of the vertical pipe.



Step 6. Pour boiling water into the funnel and as the ice melts, push the thaw pipe forward.

Step 7. After the flow starts, withdraw the pipe quickly. Allow the flow to continue until the thaw pipe is completely withdrawn and cleared of ice.

NOTE: A small pump may be used to clear a piece of pipe. However, excessive pump pressure can cause a backup; therefore, this procedure must be carefully monitored.

Scale

It is a deposit that is typically indicative of hard water.Scale can sharply reduce the flow of water to the fixtures. Calcium and magnesium compounds are found in hard water which prevent soap from lathering. This forms a scum, which slows down the flow of water. The scum deposits harden and form scale.

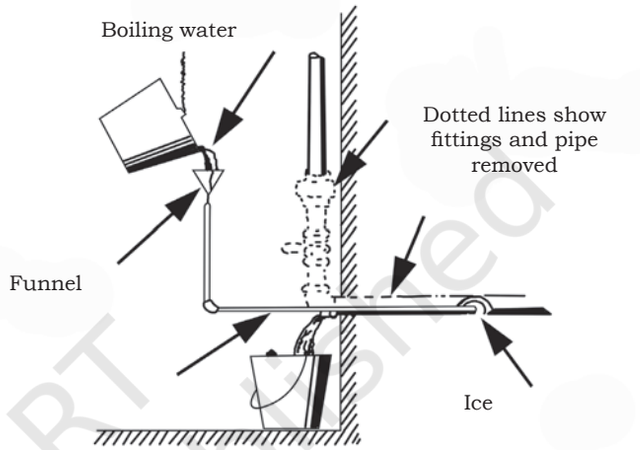


Fig. 5.8: Thawing frozen pipe

Reducing scale

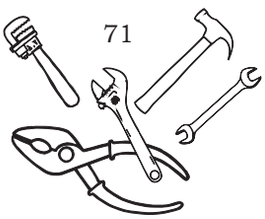
In localities where water is unusually hard, a water softener is used to reduce the hardness. The softener normally contains zeolite, which should be recharged at regular intervals. Add sodium chloride (table salt) to the water to recharge. Water softeners are programmed to recharge at a set time each day. The softened water is then piped into the distribution system.

Removing scum

To remove scum that has formed on the inside of a pipe, do one of the following.

- Flush with hot water.
- Use lye, or lye mixed with a small quantity of aluminum shavings. Only cold water should be used with lye.
- Replace the entire pipe when there is a sharp reduction of water flow.

NOTE: Chemical cleaners should not be used in pipes that are completely stopped up because the cleaners must come in contact with the stoppage directly.



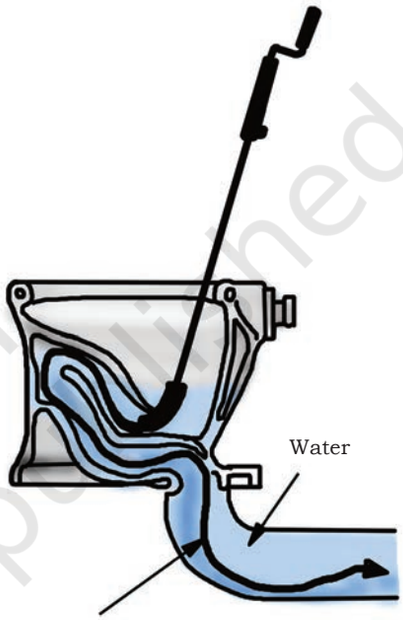
Waste system stoppages

A common problem in waste systems is a stoppage of waste. This stoppage can occur in any drain, like, floor drain, branch line, or main line. It can be due to stone, pulp, hair, grease, or other foreign matter that holds back or stops the flow of waste disposal. Use the path clearing tools to clear the such stoppages in water closets, lavatories sinks, urinals, bathtubs, shower drains, branch, main waste lines, and grease traps.

(a) Force-cup plunger

(b) Water closet snake

(c) Cleaning the basin with a snake



(d) Cleaning the toilet with a snake

Fig. 5.9 (a, b, c, d) Stoppage clearing tools

Water closet stoppages

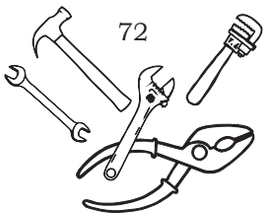
Such stoppages can be cleared using the following tools.

Force-cup plunger

Following are the steps to clear stoppages with a force-cup plunger.

Step 1. Pump the plunger up and down until the water level drops.

Step 2. Place toilet paper in the bowl and flush the water closet to check if the stoppage is cleared.

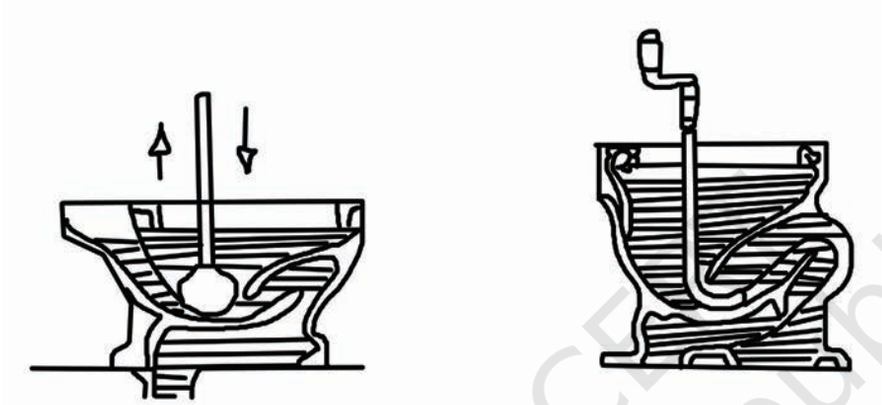


Water closet snake

It is a long coil of wire with a corkscrew line tip that is inserted into the pipes till it reaches the stoppage. The following steps can be used to clear stoppages with a water closet snake.

Step 1. Push the snake into the bowl and turn the handle clockwise with a push-pull action until the water level drops.

Step 2. Check to see if the stoppage is cleared as in step 2 (like in the force-cup plunger above).



(a) Cleaning with a force-cup plunger

(b) Cleaning with a water closet snake

Fig. 5.10 (a, b) Clearing water closet stoppages

Lavatories and sinks

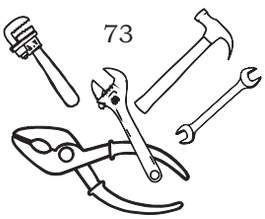
Clearing lavatory and sink P-trap stoppages

Plunger

Step 1. Place a wet rag in the bowl's overflow opening. If the lavatory has a pop-up plug, remove the plug.

Step 2. Set a plunger over the waste outlet and push it up and down until the water completely drains out of the bowl.

Step 3. Remove the rag from the overflow opening and replace the pop-up plug, if necessary.



Step 4. Run water through the drain to ensure that the stoppage is removed.

Snake (¼- to ½-inch)

Step 1. Remove the plug if the lavatory has a pop-up plug.

Step 2. Push the snake down into the waste outlet as far as it will go.

Step 3. Use a push-pull and turning action until the water completely drains out of the bowl.

Step 4. Remove the snake and replace the pop-up plug, if applicable.

NOTE: Stoppage in a P-trap can be removed by disassembling the P-trap, then removing the stoppage. Reassemble the P-trap after the stoppage is removed and flush with water to ensure good drainage of water.

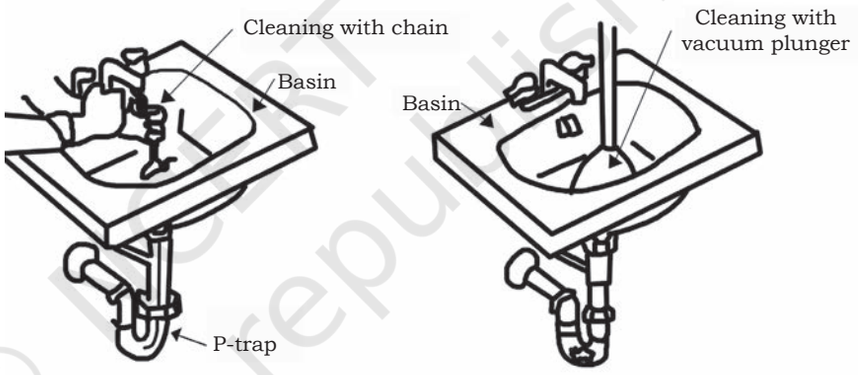


Fig. 5.11: Clearing lavatory and sink stoppages

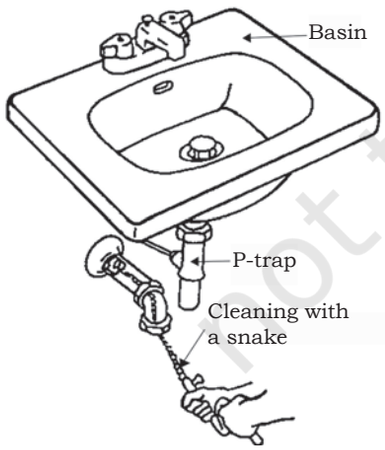


Fig. 5.12: Cleaning lavatory and sink stoppages beyond the P-trap

Clearing lavatory and sink drain line stoppages beyond the P-trap

Snake

Step 1. Place a container under the P-trap to catch the water spillage, then disassemble the P-trap.

Step 2. Push the snake into the drain line, turning it with a push-pull action until it moves freely.

Step 3. Remove the snake and replace the P-trap, then run water through the drain line to ensure that the water flows freely.

Urinals

A stoppage in a urinal with a water seal or an exposed P-trap is cleared the same as a lavatory (using a plunger and a ¼- to ½-inch snake)

Bathtubs

Use the steps below to clear bathtub P-trap stoppages.

Step 1. Remove the stopper linkage and the overflow cover.

Step 2. Push a ¼- to ½-inch drain snake into the overflow opening until it meets some resistance.

Step 3. Turn the snake using a push-pull motion until it turns freely.

Step 4. Remove the snake and run water through the drain to check if the stoppage is cleared.

Step 5. Replace the overflow cover and linkage.

NOTE: Stoppages can often be removed with a vacuum plunger. Try a plunger first; if the plunger does not work, use a snake.

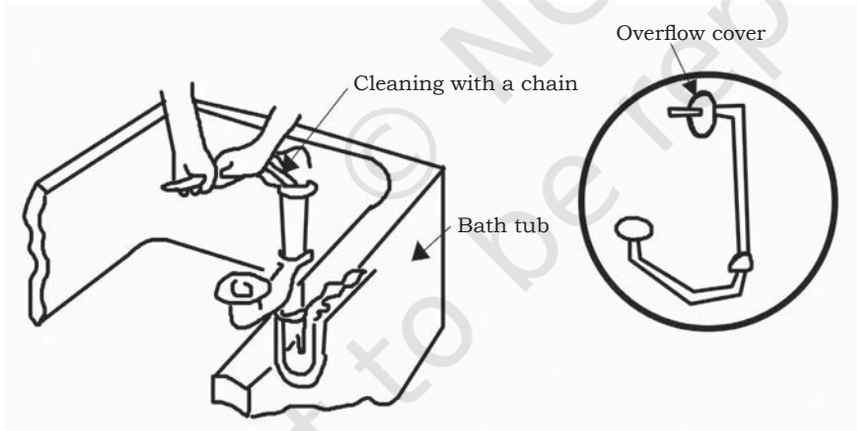


Fig. 5.13: Clearing bathtub P-trap stoppages

Bathtub drum-trap stoppages

Use the following steps to clear drum-trap stoppages

Step 1. Remove the drum-top cover and gasket and push a ¼- to ½-inch snake into the trap's lower line to search for the stoppage.

Step 2. If a stoppage exists, clear it.

Step 3. If there is no stoppage in the lower line, remove the snake and push it into the upper line.

Step 4. Turn the snake with a push-pull action to remove the stoppage and replace the gasket and cover.

Step 5. Run water through the drain to see if the stoppage is cleared.

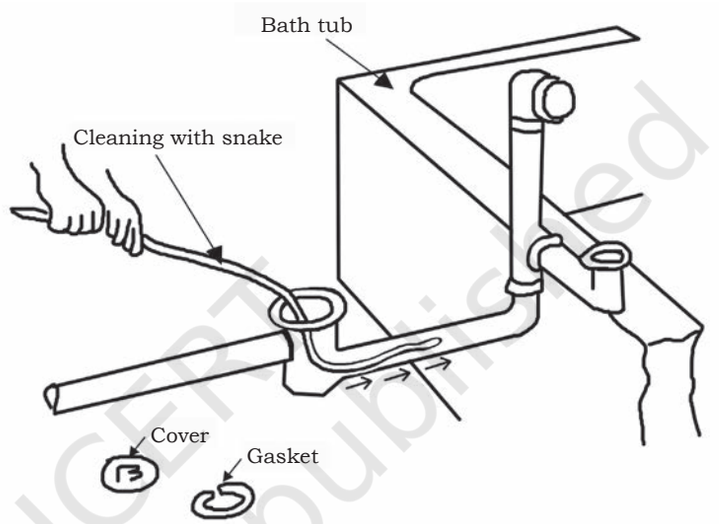


Fig. 5.14: Cleaning bath drum-trap stoppages

Shower drains

These can be cleared by using a hose. Use the steps below to clear drains.

Step 1. Remove the strainer from the drain.

Step 2. Attach the water hose to a source of water and place the other end of the hose into the drain.

Step 3. Stuff rags around the hose to form a tight seal.

Step 4. Turn the water on full force, then off and on again. The surge of water (pressure) will clear the stoppage.

Step 5. Replace the strainer.

Snake (¼- to ½-inch)

Step 1. Remove the strainer from the drain.

Step 2. Push the snake into the drain and turn the snake with a push-pull action until it moves freely.

Step 3. Remove the snake and replace the strainer.

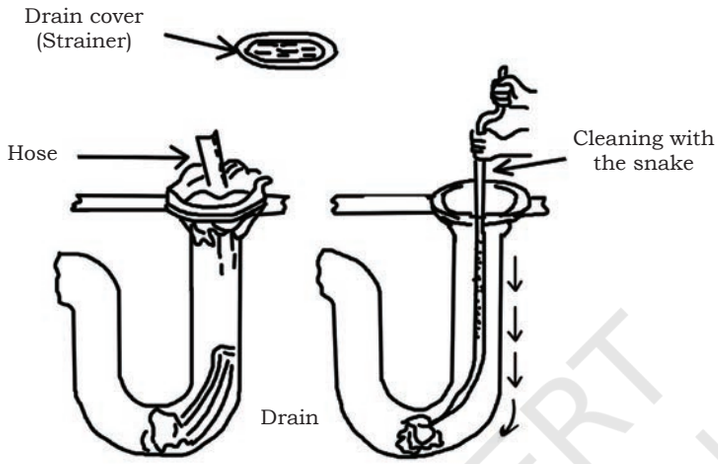


Fig. 5.15: Clearing shower-drain stoppages

Floor drain stoppage

These stoppages are cleared the same way as shower drains. A floor drain may have the strainer cemented to the floor. If so, remove it by chipping the cement around the strainer. Once the stoppage is cleared, cement the strainer back in place.

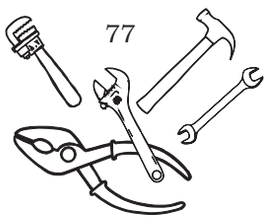
Branch and main waste lines

Stoppages that occur in a branch or main waste line in a building are cleared through a cleanout plug. Following steps may be adopted for clearing branch lines.

Step 1. Open and remove the closest cleanout plug.

Step 2. Clear the stoppage with a snake.

Step 3. Replace the cleanout plug.



Step 4. Run water through the drain to ensure that the stoppage is cleared.

Clear main lines by using the following steps:

Step 1. Remove the closest cleanout plug.

Step 2. Clear the stoppage with a ¾- to 1-inch heavy-duty snake.

Step 3. Replace the cleanout plug.

Grease traps

All work is done on the principle that grease is lighter than water and will rise to the top of the water. Use the following steps to clear a grease-trap stoppage.

Step 1. Remove the top cover and dip out the grease with a ladle.

Step 2. Scrape the walls and bottom after the grease is scooped out.

Step 3. Flush with clear water.

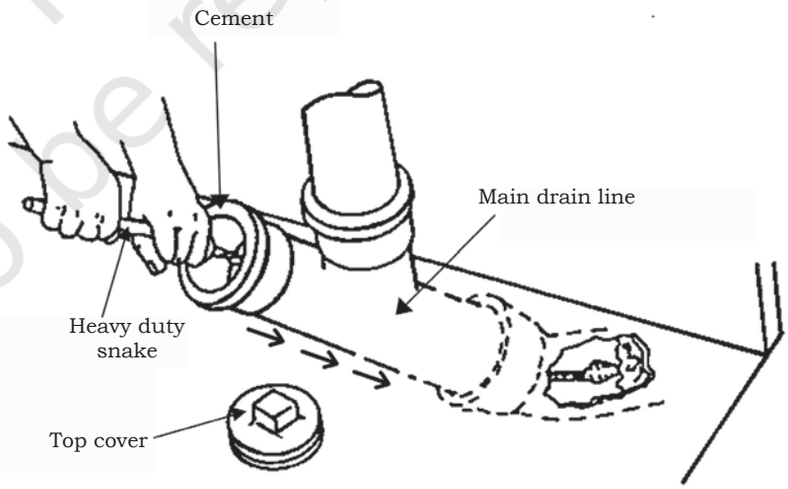


Fig. 5.16: Clearing waste-line stoppage

Practical Exercises

Activity 1

Draw the figure of a single compression faucet.

Material required

1. Pen
2. Pencil
3. Notebook
4. Single compression faucet

Procedure

1. Take a single compression faucet.
2. Observe it carefully
3. Now, draw its figure and label it.

Activity 2

Identify the components of a ball faucet.

Material required

1. Pen
2. Notebook
3. Pencil
4. Ball

Procedure

1. Take a ball faucet.
2. Observe it carefully and try to identify its components.
3. Draw its figure.

Activity 3

Identifying blockages at home.

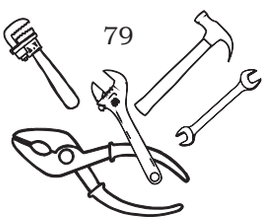
Procedure

1. Ask your parents if there has been a blockage at home.
2. Discuss with them the extent of such a blockage and try to identify why it happened.

Check Your Knowledge

A. Answer the following questions

1. Explain the different sources of leakage.
2. Write the procedure for repairing of faucets.



3. Discuss pipe corrosion. How can such a pipe be repaired?
4. What do you mean by frozen pipes?

B. Fill in the blanks

1. Reduction in the thickness of wall of a metal pipe, caused by electrolysis and acidity of water is called _____.
2. A common problem in waste systems is _____.
3. _____ resists corrosion.
4. A corroded pipe can be replaced with _____ and _____pipes.

C. Multiple choice questions

1. Water leakage can happen _____time.
   (a) always
   (b) any
   (c) ever
   (d) none of these
2. Pipe corrosion is _____of the wall of metal pipe.
   (a) thinning
   (b) thickening
   (c) cutting
   (d) none of these
3. Magnesium rods are used to protect against_____.
   (a) cold
   (b) rust
   (c) heat
   (d) None of these
4. Water supply may freeze when temperature reaches below _____ degree Fahrenheit.
   (a) 0
   (b) 23
   (c) 32
   (d) None of these